

3 DOCUMENT-IDENTIFIER: US 5690618 A

TITLE: Electronic syringe

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BSPR:

The present invention relates to an electronic syringe, and more particularly to a compact, pen-style grip, electronic syringe that allows a practitioner to administer injections or aspirations at a controlled rate and with a precise degree of hand control thereby minimizing or eliminating patient fear and discomfort.

BSPR:

Electronic syringes are known in the art. Typical uses for such devices include injecting biocompatible material, specifically anaesthetic such as block, conduction and para-apical anaesthesia, through bone tissue and administering insulin and other pharmaceuticals.

BSPR:

Thus, the present invention relates to an electronic syringe. As used throughout this specification the term "electronic syringe" has a

broad meaning
and is intended to encompass a device used for injection or
aspiration, as
warranted by the intended application.

DEPR:

It is contemplated that the materials and means described above
may be
substituted without departing from the spirit and scope of the
invention. For
example, although the above-described drive system employed an
electric lead
screw device, it is contemplated that pneumatic cylinders, solenoid,
electromagnetic or hydraulic actuators could also be employed.
Also, the
electronic control means may be any suitable device including an
application
specific integrated circuit (ASIC) or a micro controller. It is also
contemplated that a reset switch would be provided on syringe 10
to enable the
practitioner to reverse the injection procedure at any time. It is
further
contemplated that the present electronic **syringe is also suitable
for**
aspiration of various body fluids such as bone marrow, blood,
excess joint
fluids and the like. In this case drive system 42 could be provided
with a
sliding feature and a plunger engagement means which would
allow an empty
ampoule to be filled with any of the above-identified fluids.

CLPR:

9. An electronic syringe according to claim 8, wherein said lead screw and said lead nut in combination provide a backlash, said backlash providing self aspiration of said ampoule.